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HERMANN MEYER, OF NEW YORK, N. Y.

PNEUMATIC ACTION.

No. 898,761.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed December 27, 1907. Serial No. 408,292.

To all whom it may concern:

Be it known that I, HERMANN MEYER, a citizen of the United States, and a resident of the city of New York, borough of the Bronx, in the county and State of New York, have invented a new and Improved Pneumatic Action, of which the following is a full, clear, and exact description.

The invention relates to self-players, self-playing pianos and like musical instruments, and its object is to provide a new and improved pneumatic action which is very compact, not liable easily to get out of order, and arranged to allow convenient and minute adjustment of the valve from the outside, to render the action exceedingly sensitive.

The invention consists of novel features and parts and combinations of the same, which will be more fully described herein-after and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the improvement; Fig. 2 is a perspective view of the valve casing; Fig. 3 is a like view of the adjustable valve seat, and Fig. 4 is a similar view of the clamping ring.

The pneumatic A is provided with the fixed member A', and the movable member A² having a flexible portion A³ of rubber or other suitable material. In the fixed member A' of the pneumatic A screws a valve casing B, provided with an integral valve seat B' for connecting the interior of the pneumatic A with the suction chamber C, formed on one side of the diaphragm D and connected with the suction devices E, with a view to draw the air out of the pneumatic A, for collapsing the same, as hereinafter more fully described. The movable member A² of the pneumatic A is connected in the usual manner with the piano action, so that when the pneumatic A collapses then the corresponding hammer of the action is actuated to sound the corresponding string.

A chamber F, on the upper side of the diaphragm D connects by a hose G, with a tracker board opening, to permit air to pass into the air chamber F whenever a tracker board opening is uncovered by a correspond-

ing note aperture in the note sheet. A bleed hole F' connects the air chamber F with the suction devices, as plainly indicated in Fig. 1.

In the diaphragm D screws the threaded stem H' of the valve H, adapted to be seated on the integral valve seat B', or on an adjustable valve seat I, screwing in the lower end of the valve casing B. The flexible portion A³ of the movable member A² of the pneumatic A, abuts against the under side of the valve casing B and is clamped thereto by a clamping ring J, screwing on the lower threaded end of the adjustable valve seat I, the flexible portion A³ being cut out, to accommodate the adjustable valve seat I. In order to provide a tight joint between the valve casing B, the flexible portion A³ and the clamping ring J, a washer K is interposed between the said clamping ring J and the flexible portion A³ opposite the bottom of the valve casing B. Now by the arrangement described, the valve casing B is rigidly connected with the fixed member A' of the pneumatic A and also with the flexible portion A³ of the movable member A² of the said pneumatic A. Thus the movable member A² is free to swing into an open or a closed position, and at the same time the interior of the pneumatic A can be connected with the atmosphere by way of the adjustable valve seat I, whenever the valve H moves off the adjustable valve seat I and onto the valve seat B'. The head H² of the valve stem H' extends into the adjustable valve seat I, so as to be within convenient reach of the operator, to permit the latter to conveniently screw the stem H' up or down in the diaphragm D, to move the valve H into proper relation relative to the seat B'. As the valve seat I can be readily adjusted, its position is easily determined relative to the valve H. When the several parts are in the position illustrated in Fig. 1, the note sheet opening has passed over the corresponding tracker board opening, so that air is admitted to the air chamber F. The diaphragm D is thus moved downward, to cause the valve H to move off the valve seat B' and onto the valve seat I, whereby the air in the pneumatic A is drawn out by the suction devices E, and hence the pneumatic A collapses. When the tracker board opening is closed by the note sheet,

then the valve H is moved off its seat I by the preponderance of atmospheric pressure against the under side of the valve H, so that the latter moves onto the valve seat B', thus
 5 disconnecting the interior of the pneumatic A from the suction chamber C, and connecting the interior of the pneumatic with the atmosphere. When this takes place the pneumatic A is inflated and the movable
 10 member A² returns to open position.

From the foregoing it will be seen that the valve mechanism is arranged within the pneumatic and consequently takes up very little room, thus allowing a large number of
 15 pneumatics to be arranged within a comparatively small space. It will also be noticed that as the valve H can be readily adjusted from the outside relative to the diaphragm D, the pneumatic action can be rendered ex-
 20 ceedingly sensitive.

The valve mechanism is very simple and durable in construction, composed of comparatively few parts, not liable easily to get out of order.

25 Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A pneumatic action provided with a pneumatic having a fixed member and a
 30 movable member provided with a flexible portion, a valve within the said pneumatic, and a valve casing connected with the said fixed member and with the flexible portion of the said movable member.

35 2. A pneumatic action provided with a pneumatic having a fixed member and a movable member provided with a flexible portion, a valve within the said pneumatic, and a valve casing connected with the said
 40 fixed member and with the flexible portion of the said movable member, the stem of the valve extending to the outside at the said flexible portion.

45 3. A pneumatic action provided with a pneumatic having a fixed member and a movable member provided with a flexible portion, a valve within the said pneumatic, a valve casing connected with the said fixed member and with the flexible portion of the
 50 said movable member, and a diaphragm connected with the stem of the said valve, the stem extending to the outside at the said flexible portion.

55 4. A pneumatic action, comprising a pneumatic having a fixed member and a movable member provided with a flexible portion, a diaphragm, a diaphragm chamber containing the said diaphragm, a wind chest connection for the said diaphragm chamber at one side
 60 of the diaphragm, a tracker board connection for the said diaphragm chamber at the other side of the diaphragm, a valve casing secured to the fixed member of the pneumatic and having a valve seat connected with the diaphragm

chamber on the side of the said wind chest 65 connection, a valve seat adjustably secured to the said valve casing, a valve adapted to be seated on either of the said valve seats and connected with the diaphragm, the said valve casing and the said adjustable valve seat be- 70 ing secured to the flexible portion of the movable member of the said pneumatic.

5. A pneumatic action, comprising a pneumatic having a fixed member and a movable member having a flexible portion, a dia- 75 phragm forming an air chamber at one side and a suction chamber at the other side, a valve casing secured to the said fixed pneumatic member and having a valve seat for connecting the said suction chamber with the 80 interior of the said pneumatic, a second valve seat screwing in the said valve casing for connecting the interior of the pneumatic with the atmosphere, the said casing and the second valve seat being connected with the 85 said flexible portion of the movable pneumatic member, a valve adapted to be seated on either of the said valve seats, and a valve stem for the said valve screwing in the said diaphragm. 90

6. A pneumatic action, comprising a pneumatic having a fixed member and a movable member having a flexible portion, a dia- 95 phragm forming an air chamber at one side and a suction chamber at the other side, a valve casing secured to the said fixed pneumatic member and having a valve seat for connecting the said suction chamber with the interior of the said pneumatic, a second valve seat screwing in the said valve casing for con- 100 necting the interior of the pneumatic with the atmosphere, the said casing and second valve seat being connected with the said flexible portion of the movable pneumatic member, a valve adapted to be seated on 105 either of the said valve seats, and a valve stem for the said valve extending into the said second valve seat to allow adjustment of the valve from the outside.

7. A pneumatic action, comprising a pneu- 110 matic having a fixed member and a movable member, the latter having a flexible portion, a valve casing secured to the said fixed member and to the said flexible portion, a valve seat integral with the said casing, and an ad- 115 justable valve seat screwing on the casing at the said flexible portion, a clamping ring screwing on the said adjustable valve seat to clamp the flexible portion to the casing, and a valve adapted to be seated on either seat. 120

8. A pneumatic action, comprising a pneumatic having a fixed member and a movable member, the latter having a flexible portion, a valve casing secured to the said fixed mem- 125 ber and to the said flexible portion, a valve seat integral with the said casing, and an adjustable valve seat screwing on the casing at the said flexible portion, a clamping ring

screwing on the said adjustable valve seat to
clamp the flexible portion to the casing, a
valve adapted to be seated on either seat, a
valve stem extending into the adjustable
5 valve seat and a diaphragm in which screws
the said valve stem.

In testimony whereof I have signed my

name to this specification in the presence of
two subscribing witnesses.

HERMANN MEYER.

Witnesses:

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